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UNITED STATES NAVY

MEDICAL NEWS LETTER

Editor – Captain L. B. Marshall, MC, USN (RET)

Merry Christmas

To: All Hands, Medical
Department of the Navy

At this yuletide season of hope and compassion for others, many members of the Medical Department with the fleet, overseas, or ashore, are at bedsides, in operating rooms, or at work in medical laboratories. In a deep sense these daily tasks reveal the spirit of Christmas.

The professions associated with the care and healing of the sick are among the noblest followed by men and women. They have grown in significance and scope during the years. To the love that inspired Florence Nightingale and Doctor Osler to restore shattered lives, we have added a store of scientific knowledge which today guides, informs, and improves our medical ministry. The Navy has contributed its share to these great advances.

In the spirit of the season, I felicitate all of you throughout the Medical Department and our friends in other military services and in civilian practice, who have advanced man's effective control of health problems during the past year. We can share our satisfaction in these accomplishments. I look forward in confident hope that in the months and years to come, medical science will conquer many more of the natural forces which destroy, restrict, or sadden human life.

To you all and to our friends everywhere, I extend heartfelt best wishes for a Merry Christmas and a Happy New Year.

Bartholomew W Hogan

BARTHOLOMEW W. HOGAN
Rear Admiral (MC)
Surgeon General, U. S. Navy

25 December 1955

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Notice

Due to critical shortage of medical officers, the Chief, Bureau of Medicine and Surgery, has recommended, and the Chief of Naval Personnel has concurred, that Reserve medical officers now on active duty who desire to submit requests for extension of their active duty for a period of three months or more will be given favorable consideration.

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The U. S. Naval Dental School

The development of the U. S. Naval Dental School to its present position as the keystone of the career training of dental officers, is one that parallels the growth of the Naval Dental Service and the progress of civilian dentistry. The first in-service training of dental officers beyond their training in civilian dental schools was started in 1922, when Surgeon General Stitt established a Department of Dentistry at the U. S. Naval Hospital in Washington, D. C., which was then located at the present site of the Bureau of Medicine and Surgery. Three dental officers were assigned to postgraduate study as instructors. This training responsibility was formally established as a dental school on 3 Feburary 1923. Initially, this school offered a three to four weeks' course which included some military indoctrination and some professional instruction. From 1923 to 1936, many of the newly commissioned dental officers of the Navy attended this course, but by 1936, all newly commissioned officers could not be accommodated. In February 1942, the Naval Dental School moved to Bethesda, Md., when it became a component command of the National Naval Medical Center.

The present mission of the Naval Dental School is to conduct postgraduate and graduate instruction for Dental Corps officers in the field of dentistry and in military medical subjects peculiar to the requirements of the Naval Service; to instruct and train dental technicians in the various technical specialties; to participate in the preparation of training aids for use by naval dental personnel; to prepare and administer correspondence training courses for the personnel of the Regular and Reserve components of the Dental Corps; and to provide dental treatment and consultation for the National Naval Medical Center, Bethesda, Md., and to the professional activities, as required. To accomplish its mission, the School has five departments.

I. Officer Education and Training Department

The Officer Education and Training Department has the responsibility for giving instruction to dental officers that will enable them to stay abreast of current developments in dentistry and to meet the requirements for advanced degrees and specialty board certification. This department conducts the various postgraduate courses, residency type training in oral surgery, prosthodontics, periodontics and oral pathology, and specialized training in dental subjects required by the Naval Dental Service.

a. General Postgraduate Course. This course, the most important and comprehensive in existence for the in-service training of naval dental officers is now a 10-months' course. The course is the means by which young dental officers are provided with the basic knowledge they need to discharge their duties as officers in dental clinics and departments, chiefs of dental services at naval hospitals, and research and staff assignments. This course is the avenue by which those officers with demonstrable aptitude are chosen for further advanced specialty training.

b. Residency Type Training. Residencies in oral surgery, prosthodontics, periodontics, and oral pathology have been developed to meet the educational requirements of the American Dental Association. This type of training is designed to bring those individuals who have been chosen for specialty training to the level where they may take the examination by the various dental specialty boards.

c. Specialized Training. Courses in the various specialties of dentistry are offered by the school as needed by the Naval Dental Service. These courses are usually offered to dental officers who have received some advanced training in a specialty, but who have had an intervening sea or foreign shore duty and who now require an extensive refresher course.

An interesting supplement to the officer training program is the series of special lectures given twice each month throughout the school year. Outstanding men in the dental profession present discussions of timely subjects thus bringing to the school the latest information on professional problems.

d. Casualty Treatment Training. As a part of all training, all students, officer and enlisted, are given a 35-hour course in casualty treatment training, providing practice in emergency treatment of casualties which might result from a major disaster. Treatment practice is made possible through the use of moulages and other special training devices which have recently been developed by U.S. Naval Dental School personnel. These devices present a series of realistic problems which permit the trainee to participate in the treatment of shock, hemorrhage, wounds, burns, and other emergency measures.

2. The Clinical Services Department

The Clinical Services Department provides clinical support to the U.S. Naval Hospital and other commands of the National Naval Medical Center, and also, upon request, to outlying naval activities. This treatment includes operative dentistry, crown and bridge, partial and full denture prosthesis, somatoprosthesis, endodontics, periodontics, roentgenology, and oral surgery. The clinical activities are supported by laboratories for pathology, bacteriology, and biochemistry.

In addition to serving the needs of the school, the Oral Pathology Division provides a Navy-wide diagnostic service for histopathology examinations of tissue. Also, it is currently preparing a color atlas of oral pathology which promises to be of great help to the oral diagnostician.

The department also supports clinical research projects. Investigation of the cutting of tooth structure by ultrasonic vibratory mechanisms has been pioneered at the School; this investigation has received wide attention from the dental profession throughout the country.

Another investigation, that has brought gratifying results, was the development of the water control valve for the operative dental unit. This device saves more than 90% of the water normally used during patient treatment.

3. The Correspondence Training Courses Department

The Correspondence Training Courses Department plans, develops, and administers courses for dental personnel of the regular and reserve

components of the U.S. Navy. To accomplish these duties most effectively, the department maintains liaison with the Bureau of Medicine and Surgery, Bureau of Naval Personnel, and the U.S. Naval Medical School on matters pertaining to correspondence training courses.

Sixteen courses are available at this time. A course is now in preparation on the Administration of a Dental Department, and inquiries about the subject indicate that a wide-spread interest in it already exists. Enrollees in correspondence training courses have increased over 100% in the last few years and current enrollments reach nearly four hundred.

4. The Enlisted Education and Training Department

This department offers three courses of instruction:

a. The course in Dental Equipment, Maintenance, and Repair is of 10-months' duration. Although listed as a basic course, it is highly specialized, training students to repair and maintain standard dental equipment while also giving them a foundation of the principles of electricity and machine tool operation. This consolidated course of instruction, covering the equipment of all major dental manufacturers, has no counterpart in the military establishment or in civilian life.

b. The course for Advanced General Dental Technicians is of 6-months' duration, with an authorized quota of twenty students in the ratings of DT2, DT1, and DTC. The aim of the course is to prepare the dental technician to perform administrative duties and better prepare himself for advancement. The student receives instruction in property and accounting and clerical procedures, personnel management, and other subjects that will aid in the efficient operation of a dental facility.

c. The course for Advanced Prosthetic Dental Technicians is of 6-months' duration with an authorized quota of ten students in the ratings of DT2, DT1, and DTC. The partial dentures section of the course provides instruction in surveying, designing, and constructing precision-cast partials. In the complete dentures section, balanced set-ups, equilibrations, and characterization of the dentures are taught. Students are introduced to crown and bridge construction, including an extensive study and fabrication of ceramics. The course is designed to prepare the technician to supervise laboratories in the field.

5. The Training Aids Department

The Training Aids Department coordinates the evaluation, preparation, and production of training aids which are used for the training of dental personnel throughout the Navy. In doing this, the department

maintains liaison between the U.S. Naval Dental School and various bureaus and offices of the Department of Defense and civilian organizations. Departmental activities run chiefly along two lines, yet these are flexible and capable of expansion. One includes the preparation for publication of such aids as training manuals, study guides, handbooks, and other manuscript materials. The other includes the preparation for production of films, television programs, and the like. In a closely related type of activity, the department assists in an advisory capacity in the preparation of exhibits for display at national scientific and professional meetings. (Naval Dental School, NNMC)

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Summary of Dental Research

During the last ten years, the dental research program has been primarily concerned with two chronic diseases, namely, dental caries and periodontal disorders. The high rate of attack of these two diseases has few parallels and, like many other chronic diseases such as mental, metabolic, and neoplastic disorders, they have been strikingly resistant to preventive measures. Other minor phases of the program have been concerned with restorative and corrective procedures and the science of dental materials as related to prosthetics and oral surgery. These studies have been conducted in clinics and laboratories and, in some instances, in collaboration with nearby universities.

One of the cooperative studies with universities, started in 1947, has been responsible for many follow-up studies. CDR F. L. Losee, DC USN, (then LCDR) and LCDR R.S. Leopold, MCS USN (then LT) of the Naval Dental School, worked with Dr. W.C. Hess of the Medical and Dental School, Georgetown University. They investigated the components of dentin and enamel and found that a portion of these two dental tissues was organic in nature. This helped to explain the passage of radioisotopes through dentin and enamel. It is thought that radioisotopes use the organic pathways in penetrating the teeth. Other studies are being pursued at the present time to determine if these organic pathways in teeth can be altered by nutritional means and, thereby, change the caries susceptibility of rat teeth. Perhaps the most important outgrowth of the original study has been in the field of experimental animal surgery. In the past, bone grafts have frequently been sequestrated from the new site in the host. This has been particularly true of homologous grafts. One theory, which has been advanced as the cause for failure of many homologous grafts, is an antigenic reaction due to the organic content of the transplanted bone. CDR Losee, now with the Dental Division, Naval Medical Research Institute, has been able to remove the organic content of bone prior to the time it

is transplanted. This has permitted heterologous grafts which, heretofore, have not been successful. In the preliminary studies to date, rat femurs and bovine bone have been successfully transplanted into dogs. These results are most encouraging and may ultimately lead to new techniques which can be applied to human patients.

The flora and fauna of the mouth are more numerous and diverse than in any other region of the body. The role of these organisms in mouth infections and in the relation of mouth infections to systemic disease is not well known. The bacteriology of the normal as well as the diseased mouth is extremely complex. For instance, there is one view that the microorganisms found under pathological conditions are no more than an overgrowth of those normally found in the mouth. The ecology of these mouth habitants is extremely important—especially the antagonisms—and little is known about them. In spite of these difficulties, CDR C. A. Ostrom, DC USN, did make significant progress in the detection and identification of organisms which he seeded and recovered from the oral cavity. His early work in 1947 was with animals and later he refined and further developed the techniques and employed them in human volunteers. The technique has been used successfully in recovering Mycobacterium tuberculosis organisms from tuberculous patients. This may have far reaching importance in the field of medicine as there is a chance of detecting and identifying pathogenic organisms prior to the development of clinical symptoms.

In 1948, CDR C. E. Dawson, DC USN, and W. Blagg investigated the effect of human saliva on the cholera vibrio. They found that the saliva of certain patients exhibited antibacterial activity to this organism. More recently, CDR M. G. Wheatcroft, DC USN, did similar immunologic studies in which he compared human blood serum and salivary antibody titers in cases of Brucella melitensis infection. He found correlations between the titers of these two body fluids and stated that it is probable that antibodies are transferred from the serum to the saliva. These studies were both conducted at Naval Medical Research Unit No. 3, Cairo, where there is an abundance of clinical material involving diseases which are uncommon in the United States. The full importance of the saliva in preventing air-borne and food-borne diseases has never been recognized, but these studies may lead to a better understanding of this approach to immunology.

CDR (now Captain) J. A. English, DC USN, collaborated in 1948 with general pathologists at the Naval Medical Research Institute in investigating the effects of high dosages of radiation on oral tissues and on dental development. He found that physiologically active odontogenic tissues were inhibited by x-ray irradiation at the epilation dose level (about 1500 r). In both swine and rats, tooth development was interfered

with, to the extent that hypoplasia or more severe tooth deformation resulted. More recently in the same laboratory, enzymatic studies of radiated salivary gland tissues have been carried out by biochemical techniques. These studies have shown that, following radiation (1500-2000 r), there may be a significant increase in specific enzyme activity in two enzymes involved in carbohydrate metabolism. These studies are both directed toward learning more about the basic mechanisms involved in high dosage radiation of the kind that might occur in nuclear detonations.

Stability of dental prosthetic appliances has been a major problem confronting the dental profession since the time replacement of missing teeth was first attempted. Improvement of techniques and materials and greater knowledge of the physiology and anatomy of the mouth have greatly reduced these problems. However, there is a small percentage of patients who have lost so much alveolar bone that comfortable functional dentures are extremely difficult to construct. In an effort to alleviate this condition, a cooperative study was initiated by CDRS C. H. Blackstone and M. L. Parker at the Naval Dental School. This was done in conjunction with the Tissue Bank of the Naval Medical School and the Experimental Surgery Section of the Naval Medical Research Institute. Under surgical conditions, dogs' mouths were prepared for the grafting by removing four mandibular teeth and excising a section of the mandible from the crest of the alveolar ridge. The bone which was removed varied in dimension from 7 to 10 millimeters. This surgical defect was rebuilt by various types of freeze-dried tissues and it was found that the freeze-dried homologous cartilage was the most successful of those tested. Clinically, the alveolar ridges retained the height and the contour which was established by grafting, and the grafts became fixed in from 2 to 6 weeks. Examinations were made at a later date of cross sections of the mandibles through the graft sites at various intervals of time (49, 77, 126, and 217 days). Vascularization of the cartilage appears to occur early and is followed by osteogenesis. At approximately 220 days, complete replacement of the graft by a mature type of bone may be noted. Due to the success of the animal studies, mandibles of four patients have been reconstructed with homologous freeze-dried cartilage for the purpose of providing more bony support for dentures. While these represent only a small series of cases, the results indicate that this may become a useful corrective procedure for this condition.

Realizing the value of rats in the study of dental caries, CDR (now Captain) C. A. Schlack, DC USN, while on duty at the Naval Medical Research Institute, started to develop a strain of rats which were susceptible to caries. By inbreeding, a susceptible strain of rats was developed. In subsequent studies, CDR F. L. Losee learned that these rats could be made to develop carious lesions in 30 days, whereas, it usually requires

at least 100 days to develop caries in the stock Osborne-Mendel rat. Not only does this permit the completion of more studies in the same period of time, but it demonstrates that hereditary factors play an important role in determining the susceptibility to dental caries.

For the past 8 years, dental research personnel at the Naval Training Center, Great Lakes, Ill., have been primarily engaged in studies related to dental caries and periodontal diseases. The results of tests of 60 different dentifrices, which have been modified by either antibiotics or enzyme inhibitors, have shown that the dentifrices tested had little or no effect on certain organisms which when present in high counts are indicative of caries activity. While these tests point to little hope for a therapeutic dentifrice, other studies are being continued.

In another investigation, experimental caries have been produced in an "experimental mouth" designed and developed by B. A. Yocke, DT3. This device permits the in vitro study of caries and at the same time allows the investigator to vary certain experimental conditions. While there is some doubt as to whether the lesions developed in this device are identical with human lesions, it does permit biochemical, microbiological, and nutritional studies. For his contribution to dentistry, Yocke received a letter of commendation from the Surgeon General.

It has been reported that topical applications of sodium fluoride reduce the incidence of carious lesions in children. The suggestion was made that this method of reducing the formation of new lesions be employed in the Navy. Prior to initiating this as a preventive program, a controlled study was undertaken at Great Lakes. It was found that this method did not reduce the rate of new caries in the military age group. The results of this clinical study have saved the Navy time and money as this treatment procedure was not adopted as originally suggested.

Another interesting study at Great Lakes, and in collaboration with the Dental School of the University of Illinois, has been their joint study of the healing capacity of the tissues in the pulp chamber. Many teeth which normally would have been extracted due to the advanced carious lesions have been treated by amputation of the diseased pulp followed by chemotherapy with antibiotics and other therapeutic agents. The results of the preliminary tests seem to indicate that some teeth perhaps can be treated and preserved. If more teeth can be retained, the requirement for dentures will be decreased.

The Navy has been one of the pioneers in the field of magnetostrictive dental cutting devices (ultrasonic dental drill). The Bureau of Medicine and Surgery received a letter of recognition from the National Research Council for its valuable contribution in this field of endeavor. This has been largely the result of CDR A. C. Neilsen's efforts. He and his coworkers at the Naval Dental School found that the cutting device

developed by the Navy caused undesirable effects in the teeth of guinea pigs. Thus, they have recommended to the profession to proceed with caution until biological tests establish the safety of this new cutting device.

In summary, it can be said that the significant accomplishments of dental research have been instrumental in improving oral health. Through research, both independent and collaborative, dental science and medicine have become more closely associated and have more understanding of each others' problems. Finally, through the efforts of dedicated dental officers, enlisted technicians, and civilian scientists, dental research in the Navy has attained a status of high esteem and tremendous importance as a major phase of the Navy's research effort. (DentRes, BuMed)

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Clinical Experience with Warfarin

Although the presently available anticoagulants have been of great clinical usefulness, well-recognized defects are inherent in them. Heparin requires frequent parenteral administration and is costly. Bishydroxycoumarin (Dicumarol) has a long latent period between the time of administration and onset of therapeutic effect. Ethyl biscoumacetate (Tromexan) loses therapeutic effect within a few hours after reaching the therapeutic level, thus rendering smooth control of anticoagulant action difficult. Other of the newer anticoagulants possess undesirable side-reactions. A more nearly ideal anticoagulant continues to be a practical need. For this reason, a clinical study has been conducted on warfarin (Coumadin) sodium, one of the group of coumarin drugs produced by Dr. Karl Paul Link and his group at the University of Wisconsin. The substance, 3-(a-phenyl-B-acetylethyl)-4-hydroxycoumarin, is highly active as a hypoprothrombinemic agent, is soluble and stable, and is suitable for intravenous use.

The authors' use of warfarin sodium given intravenously as an anticoagulant was begun in May 1953, and, in March 1954, he began use of tablets for oral administration. Ten cubic centimeter ampules of warfarin sodium containing 75 mg. of the drug were secured for intravenous use. Scored tablets prepared in 25 mg. size were used for oral administration.

Patients with acute thrombophlebitis, pulmonary embolism, myocardial infarction, or other conditions requiring anticoagulant therapy, were given initial dosage of 50 to 80 mg. of the drug either orally or intravenously after determination of prothrombin time was accomplished. Prothrombin determinations were made daily at 8 a.m. thereafter and the required maintenance dose of the drug estimated. With few exceptions, attempts were made to achieve constant levels within the therapeutic range by daily dosage with warfarin sodium after the peak effect of the

initial dose had been reached. Prothrombin tests were performed on 100% plasma by the one-stage method of Quick with use of thromboplastin (Simplastin), and results were reported both as prothrombin time in seconds and as a percentage of normal prothrombin. Control prothrombin times were usually 13 seconds and rarely 12 or 14, which were considered 100% of normal. Whenever hypoprothrombinemia became excessive, or hemorrhage of gross or microscopic proportions occurred, menadione sodium bisulfite or phytonadione (Mephyton) was administered parenterally in a single dose.

The author treated 100 patients with warfarin sodium. All of the patients were adults; ages varied from 21 to 91 years. The series includes 42 cases of myocardial infarction, 12 cases of intermediate coronary syndrome (coronary insufficiency), 35 cases of acute thrombophlebitis, 7 cases of pulmonary embolism, 2 cases of congestive heart failure, and 2 cases of chronic auricular fibrillation preparatory to conversion to normal rhythm.

Warfarin sodium is a rapidly acting anticoagulant drug, producing therapeutic hypoprothrombinemia in approximately 21 hours when administered intravenously and in 24 hours when administered orally. Absorption must be almost complete from the intestinal canal, because the response to doses given orally and intravenously is approximately the same with a delay of about three hours in the onset and peak of action when the drug is given orally. Heparin may be used during induction of therapeutic hypoprothrombinemia as was done in 28 cases, provided care is taken that blood for prothrombin determination is not drawn within four hours of the administration of heparin. Rarely will it be necessary to use heparin therapy for more than 24 hours when warfarin is administered as the primary anticoagulant.

Maintenance of smooth levels of hypoprothrombinemia proved to be relatively easy due to the prolonged action of the drug. In instances where the initial dosage of 75 mg. of warfarin sodium proved inadequate, supplementary dosage corrected the defect without difficulty. Administration of phytonadione restored prothrombin to safe levels and led to clinical cessation of bleeding in all instances in which it was attributable to hypoprothrombinemia.

Warfarin (Coumadin) sodium has been used as the hypoprothrombinemia agent in 100 clinical cases requiring anticoagulant therapy. This substance is soluble and active by intravenous and oral administration in approximately the same dosage. The initial dose was given intravenously in 21 cases, orally in 79. Maintenance dosage was given intravenously in 13 of the former group and orally in the remaining 87 cases. Therapeutic hypoprothrombinemia is induced in adults by an initial dose of approximately 75 mg. of the drug within an average of 21 to 24 hours, depending upon the route of administration. The maintenance dose by

the continuous method, based on frequent (daily) prothrombin determinations, varied among patients from 4 to 19 mg., averaging about 10 mg. whether the drug was given orally or intravenously, and was consistent from day to day in the same patient. Prothrombin returned to normal levels after therapy with warfarin sodium was discontinued in an average of two days measured from the time of the last determination within therapeutic levels.

Hemorrhagic phenomena occurred in 8 cases and were attributable to anticoagulant therapy in 5 of these cases (5%). They consisted of gross or microscopic hematuria which cleared rapidly on administration of phytonadione. Menadione sodium bisulfite or phytonadione was administered in 10 instances for various reasons and invariably produced significant elevation of the prothrombin level. No side effects (effects other than the induction of hypoprothrombinemia) were encountered. None of the 4 deaths that occurred in patients of the series were attributable to anticoagulant therapy; clinical estimate of the results of anticoagulant therapy was uniformly good. It is concluded that warfarin sodium possesses properties that make it more nearly an ideal anticoagulant than the other agents now available. (Colonel B. E. Pollock, MC USA, Clinical Experience with Warfarin (Coumadin) Sodium, A New Anticoagulant: J. A. M. A., 159: 1094-1097, November 12, 1955)

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Clinical Picture of Endocardial Fibroelastosis

An entity, variously labeled as endocardial fibrosis, endocardial fibroelastosis, endocardial sclerosis, and subendocardial fibroelastosis, has become well established during the past decade. This is evidently the same disease process previously described as fetal endocarditis.

The disease and its location suggest that endocardial fibroelastosis is probably the proper title. There seems to be at least two separate disease patterns characterized by this glistening, white, thickened endocardium: one occurring in infants and young children and a second in adult life. Although the pathologic results appear similar in the two age groups, there is sufficient difference in the clinical picture to justify considering endocardial fibroelastosis (infantile and childhood type) as a distinct diagnostic entity.

The clinical picture is repetitious and recognizable. A newborn, an infant, or a young child develops respiratory distress. The manifestations are frequently cough, noisy breathing, grunting expiration, flaring of the nostrils, and tachypnea. Frequently, the child has previously been well. These signs of heart failure are usually initially

attributed to bronchial pneumonia. The child may die immediately after an illness of but a few days, but usually the respiratory difficulties persist in spite of antibiotics. Because of the persistent respiratory problem, an x-ray of the chest is obtained. This will indicate not only bilateral pulmonary congestion, but an enlarged globular heart of no specific contour. This is frequently the first suggestion that the heart is involved in the illness. Re-examination of the patient will confirm that a persistent tachycardia is present. The heart sounds are muffled and distant. A diastolic gallop rhythm is common. A murmur may or may not be heard. A tender large liver and peripheral edema may be found. Occasionally, hepatomegaly and ascites are present without edema. An occasional patient will have severe right-heart failure with tricuspid regurgitation manifested by deep systolic jugular pulse and a pulsatile liver. The obvious physical findings of an associated congenital lesion such as a coarctation of the aorta or ductus arteriosus may be present. However, these do not seem adequate to explain the cardiac failure. Pallor and a fall in blood pressure are commonly noted.

The electrocardiogram is usually abnormal. In addition to a sinus tachycardia, the most frequent change is in the T waves with depression, flattening, and sometimes inversion. These changes are nonspecific. The RS-T segment is frequently depressed. P-R interval prolongation and slight widening of the QRS complex are common. Tall peaked P waves suggest auricular involvement. In general, the findings are nonspecific and in keeping with the diagnosis of subendocardial or myocardial ischemia and auricular dysfunction.

The progress of the disease is unpredictable, but generally downhill. Digitalization, sodium restriction, and mercurial diuretics frequently control the cardiac failure. However, the cardiomegaly persists and eventually cardiac failure and death occur. An occasional child expires in shock with pallor, cold, damp extremities, and hypotension. Moderate cyanosis is not uncommon.

A fair state of compensation with therapy and restricted activity occurs in a few children for as long as two or three years. It is possible that a similar endocardial lesion seen in adults simply represents quiescent or latent disease from childhood. However, the uniformity of the pattern of the childhood picture and the relative disappearance of the disease during the second, third, and fourth decade are arguments against this. The disease must be differentiated from bronchial pneumonia, rheumatic carditis, acute myocarditis, Fiedlers myocarditis, paroxysmal auricular tachycardia of infancy and glycogen storage disease. (Dimond, E. G., Allen, F., Moriarity, L. R., The Clinical Picture of Endocardial Fibroelastosis - Infant and Childhood Type: Am. Heart J., 50: 651-654, November 1955)

Tuberculosis Relapse Factors

The present study was undertaken to evaluate statistically the effects on relapse of various factors which might influence the outcome of pulmonary tuberculosis. The factors included were sex, extent of disease, age, condition on discharge, bacteriologic and roentgenographic data, regimens of chemotherapy, and types of other treatment. It is important to determine the various factors related to relapse in order to minimize the frequence of reactivations.

The present study is concerned with a selected group of patients with pulmonary tuberculosis who were discharged from Glen Lake Sanatorium during the period from January 1, 1948, through December 31, 1953. Follow-up information included data up to November 30, 1954.

The inclusion of relapse data for patients who received chemotherapy alone or with excisional therapy and the duration of the follow-up observations make the present report different from earlier studies. Great effort was made to analyze the material with the aid of appropriate statistical techniques.

The factors of relapse in pulmonary tuberculosis are so complicated that one factor may be analyzed alone without finding any apparent association with the rate of reactivation, but if combined with another factor it may be found to have a significant correlation with the incidence of relapse. In the present study, this has been shown in the case of "strict" bed rest when associated with other forms of treatment and chemotherapy when used with other forms of therapy.

Analysis in the present study revealed that the post-treatment relapse rate for pulmonary tuberculosis was definitely higher in males than in females. If the age was also taken into account, however, it was found that there were no important differences in relapse rates for the two sexes in certain age groups, namely 10 to 29 years, and in patients more than 70 years of age. Patients in the older age groups had a greater propensity to relapse.

Two possible explanations for this finding in the present study deserve comment. The older age groups had less adequate total treatment during the acute phases of tuberculosis and this was also probably true in the pre-chemotherapy and pre-resection era. Furthermore, their age would often make resectional surgery unfeasible. More attention should be paid to the older age group whose so-called "latent" tuberculosis has a great potentiality for progression.

On the present hospital service, streptomycin was used alone until 1950. At that time, streptomycin-PAS was used in a few patients, but the majority still received streptomycin alone (1 gm. daily) for less than 3 months. Long-term regimens (more than one year), consisting of streptomycin (1 gm. twice weekly) with PAS (12 gm. daily) were initiated in 1952.

At about the same time, the use of isoniazid (300 mg. daily) was instituted either alone or along with streptomycin.

The patients who were on regimens of streptomycin alone or with PAS for 3 months or less were observed from 3 to 6 years. The patients who received isoniazid alone, isoniazid-streptomycin, or streptomycin-PAS for prolonged periods were observed from 11 months to 2 years. Why apparently significant differences were found among regimens of chemotherapy combined with other treatments, but not among the regimens when used alone, cannot yet be answered.

The type of treatment appeared to influence significantly the incidence of reactivation. It was evident throughout this study that prolonged chemotherapy for one year or more was remarkably effective as was lung resection combined with chemotherapy. Resectional surgery plus chemotherapy demonstrated superiority over chemotherapy alone in patients with far advanced tuberculosis but this was not found to be true in patients with moderately advanced tuberculosis. The cumulative incidence of relapse during the period of observation following discharge was 28.5%.

Significant relationships were demonstrated between incidence of relapse and the following factors: sex, extent of disease, unilateral and bilateral lesions, age, circumstances surrounding hospital discharge, condition on discharge, bacteriologic findings on admission, bacteriologic findings on discharge, presence or absence of cavity on admission and discharge, duration of "strict" bed rest combined with other treatments, regimens of chemotherapy combined with other treatments, length of chemotherapy, and type of treatment.

There were no significant correlations between the incidence of relapse and the following: (1) right or left pulmonary lesions among unilateral cases, (2) duration of disease, (3) length of hospitalization, (4) duration of "bed rest" alone, and (5) the particular regimens of chemotherapy when used alone. (Oyama, T., Factors Influencing Relapse in Pulmonary Tuberculosis: Am. Rev. Tuberc., 72: 613-629, November 1955)

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Surgery of Blood Vessel Grafts

In general, there are five main indications for re-establishing the arterial continuity of the aorta and the major arteries: (1) obliterative diseases of the aorta and the major arteries of the body; (2) aneurysms of the aorta and major arteries; (3) injuries which have resulted in interruption of arterial continuity secondary to thrombosis or division of an artery; (4) tumors situated near major arteries in which it is necessary

to resect these blood vessels in order to perform an adequate "cancer operation;" and (5) congenital vascular lesions.

The most common use of blood vessel grafts is in the treatment of obliterative arterial diseases involving the aorta and the arteries of, and those which supply, the lower extremities, secondary to atherosclerosis. The chief reason to re-establish arterial continuity in the majority of these patients is to restore the muscular function of the limb by improving the arterial blood supply to it. Intermittent claudication, the most common symptom in these patients, develops because of an inadequate arterial blood supply to the muscles of the lower leg, thigh, or buttocks during muscular exercise, the result of arterial obliteration in the major arteries to the involved limb.

The arteries most commonly affected by the obliterative process, which can be treated by vascular grafts, are the abdominal aorta distal to the renal arteries, the iliacs, the femoral, and the proximal portion of the popliteal artery. In the case of smaller arteries, such as the posterior tibial, anterior tibial, and peroneal arteries, the lumen of which are so small in the diseased state that vascular anastomosis can rarely be accomplished.

One of the most important indications for the use of blood vessel grafts is in the treatment of abdominal arteriosclerotic aortic aneurysms, because of the inevitability of death resulting from rupture of the aneurysmal sac. It is believed that the presence of an abdominal aortic aneurysm, whether it is giving symptoms or not—but especially if it is—is sufficient indication to warrant resection of it with replacement of the aorta and its major bifurcation with an aortic graft. In addition, the insertion of a blood vessel graft to restore the arterial continuity after the resection of an aneurysm of the iliac, femoral, and popliteal arteries is the best form of treatment of these lesions. Excision of aneurysms involving these blood vessels is performed chiefly to prevent rupture of the aneurysmal sac, but also, in addition, to relieve pain and to prevent embolization of the arteries distal to the aneurysm from the dislodgment of an intrasaccular thrombus. The results of this method of treatment in this type of lesion have been especially gratifying because the threat of death from rupture of the aneurysm has been removed and at the same time normal arterial circulation is restored to the parts distal to the site of the aneurysm. The use of arterial homografts is also of great value to re-establish arterial continuity after removal of aneurysms involving other major arteries, including the iliac, femoral, popliteal, subclavian, and carotid arteries.

The value of vascular grafts in the treatment of major arterial injuries secondary to high velocity missiles was clearly demonstrated by Jahnke and Seeley and others in reports from the United States Army Medical Department during the Korean conflict.

The operability and, undoubtedly, in some cases the curability of malignant lesions that involve major arteries, especially in the neck and limbs, can be greatly extended and improved by utilizing vascular grafts because much wider excisions of the growths with greater margins of safety will be possible if the involved artery is resected with the tumor and the arterial continuity restored with a graft, thereby preserving the part distal to the tumor.

Another important use of vascular grafts is in the treatment of congenital arterial lesions. They are of special value in the infantile type of coarctation of the aorta where the narrowed portion is so long that restoration of the aortic continuity is impossible without the insertion of some type of graft.

For practical purposes, three types of blood vessel grafts are available to restore arterial continuity: (1) autogenous venous; (2) homologous venous; and (3) homologous arterial. A fourth type of graft is a tubular prosthesis made from one of several synthetic fabrics including Vinyon-N, nylon, Orlon, and Dacron.

The utilization of homologous blood vessel grafts has necessitated the development of some method for preserving blood vessels. At the present time, four methods are available: (1) nutrient broth, (2) quick-freeze; (3) freeze-dry; and (4) frozen-irradiated.

It is believed that the use of homologous arterial grafts is a method of treating aortic and major arterial lesions which supplants all others in many patients. It is a feasible procedure today because of: better surgical equipment and suture material; the availability of the anticoagulant heparin to prevent the clotting of the blood during the operative procedure, and the antibiotics to prevent infection; improved anesthesia techniques including the catheter spinal type of anesthesia which has been most commonly used; and better preoperative and postoperative care of these critically ill patients; and perhaps most important of all is the fact that artificial homografts are now available in the blood vessel bank for the performance of these highly technical procedures. The end-to-side type of vascular anastomosis has made it possible to extend the homografting procedures to include cases that could not possibly be accomplished with the end-to-end method. The chief contraindications to this type of surgery are (1) severe coronary disease which would make these long operative procedures too dangerous to perform; (2) extensive obliterative arterial disease involving the aorta and the major arteries so that the grafts can not be anastomosed satisfactorily to the host arteries; and (3) obliteration of the popliteal artery and its terminal branches. (Linton, R.R., Some Practical Considerations in the Surgery of Blood Vessel Grafts: Surgery, 38: 817-833, November 1955)

Disaster Relief Planning

Information obtained from two operations of an emergency nature involving disaster relief planning during the past year has revealed the urgent need for adequate planning for exigencies of this nature. Had adequate passive defense plans been formulated and effected, much delay and confusion resulting from sudden calls to participate in such operations would have been avoided. This discussion is not intended to detract from the meritorious efforts of the Units participating in any discussed operations. In fact, the Surgeon General has indicated his warmest personal satisfaction at the noteworthy achievement of all personnel who participated. Instead, however, it is intended to direct active planning at all levels to the development of, and exercises in, passive defense or disaster plans.

One example occurred during the Operation "Passage to Freedom" involving the evacuation of over 300,000 refugees from the Haiphong Area of French-Indo China. This operation was set in motion and actually started within less than two days from the first receipt of notice that this was to be a naval operation. A naval medical task group was organized in less than 24 hours and was on board ship and underway. However, the equipment, medicines, and additional personnel necessary for fulfillment of the mission had to be ordered by dispatch from the ship enroute to the operation.

Considerable confusion and delay (not to mention lost tempers, etc.) resulted from this procedure. Over two weeks time was lost before the equipment was received by the Medical Task Unit. Some of the equipment, specially ordered and purchased on the open market was shipped to the Task Group, but was never received by the group. The sad part of the story is this: The equipment, ordered because it was vital to the mission, actually arrived in the area of operations in less than three weeks, but the group was not aware of its procurement and arrival until some time after members of the Task Group concerned with its operation had been phased out and had returned to their permanent duty stations and the equipment had returned to its initial starting point. Other equipment that was "begged, borrowed, or stolen" from other units of the Navy, the Marine Corps, or the Army arrived in two or three weeks, but again, several days delay were necessitated in its use because the personnel who were to operate this equipment had to learn how to use it first, and had to procure necessary chemicals from local sources—again, no simple task.

Another example of the need for disaster or passive defense planning occurred during the Tampico floods in Mexico and the relief to the city of Corozal, British Honduras, following hurricane Janet. There was a Preventive Medicine Unit standing by to assist in the relief operations

whose members have been constantly trained for such operations, but it was never called in, although the Officer in Charge was called in for two days twelve days after the disaster occurred.

Fortunately, a medical task group was rapidly organized under the District Medical Officer of the 15th Naval District. This Task Group performed superior service and received high praise from United States and Mexican authorities. Again, however, all equipment, medicines, and personnel had to be procured from different sources and transported to the area with time losses which could have been avoided had a proper plan been previously developed and put into operation.

A Chief Warrant Officer of the Hospital Corps, for example, obviously had made previous disaster plans, as this quotation from his letter indicates. The quotation also indicates some of the conditions encountered:

> "It seems weeks ago since I was sent over from Guantanomo Bay to assist British Honduras in the Corozal area following hurricane Janet. It has been an experience, to say the least. The hurricane hit in what is known as the "back country" with the largest town being the city of Corozal, population 3986. Eleven persons were killed and eighty or more were injured. I have seen hurricanes before, but never one which did as much damage. Concrete buildings were flattened and the town was a complete wreck. How so many escaped injury, we will never know or understand.
>
> I brought a 100-gallon tank Buffalo Turbine, a Model 303 Microsol, and a barrel-top sprayer along with all the insecticide concentrates we could spare, plus paradichlorobenzene and HTH (70% hypochlorite). Flies were reported to be resistant to DDT and to Dieldrin, but chlordane did an effective job. We treated for fly control some 36 villages and the city of Corozal. Both the Turbine and the Microsol did excellent work. I brought my Jeep as a tow vehicle. The British Honduras provided their senior Sanitary Inspector. We lived in the bush for a few days, then set up headquarters in Orange Walk and operated from there. As epidemic control measures, we chlorinated all water supplies, set up a paradichlorobenzene-in-privy program, and killed as many flies as we could. The Province Director of Health seems pleased.
>
> It was hard work and I'm sure there is not one inch of skin on my body that has not provided a meal for several mosquitoes. Their "Taenys" are about twice the size of ours (therefore, twice as hungry), with A. albimanus by the millions. I am sitting in a boarding house in Belize waiting for an air lift for my equipment and myself to Tampico. I only hope their flies are not DDT resistant, as that is all the insecticide we have left."

The following extracts are from a report by a Captain in the Medical Corps, quoted to further summarize the services rendered by personnel of the Navy Medical Department in the Tampico area and to indicate some of the factors to be considered in disaster planning:

"a. Background information. It is estimated that an area of more than 300 square miles was inundated. Some 60,000 people in the Tampico area were driven from their homes by the flood waters. Waters receded quickly in the upper regions of the flooded area and roads were open to inland sources of food, medical supplies, etc. A wide area, however, was still inundated and would remain so for 7-10 days more.

Conferences with local physicians and health authorities revealed that endemic diseases present included typhoid fever, amebic dysentery, bacillary dysentery, and malaria. It was stated that 90% of the population was immune to smallpox by means of vaccination. Typhoid inoculations were reported to have been maintained fairly well. The malaria control program consisted of DDT residual spraying of buildings and the application of plain oil as a larvacide. The staff and equipment were considered adequate for normal situations.

b. Navy participation. On 1 October 1955, CDR E.C. Sweeny MC USN, the Senior Medical Officer of Task Group 84.7, and eleven other Navy medical officers and twenty-three corpsmen arrived. In conference with local health authorities, a joint program was planned which was inaugurated on 2 October. The local practicing physicians were gradually assuming more and more of the load of medical care. They participated in all phases of the work.

Mexican and U.S. Navy Medical Teams were flown by American helicopters to the marooned villages where routine medical care and typhoid immunizations were provided. Similar services were rendered in Tampico. After the typhoid inoculations were completed in Tampico, DPT (Diphtheria-Pertussis-Tetanus) immunizations were started for children between the ages of 2 months and 15 years. In addition, medical teams went from house to house in an effort to immunize a higher percentage of the local populace.

Early insect control was considered important; so the CWO HC from Guantanamo Bay, Cuba, was brought into the Tampico area. On Sunday, 10 October, a Lieutenant Commander, MSC, was flown from Corpus Christi for a quick estimate of the situation and returned on 12 October with insecticides, equipment, and 2 HMC, ESTs. All were made available to local authorities. In addition, offers of aircraft dispersal of insecticides by Navy planes from Corpus Christi were made to federal and local authorities.

The U.S. Marine Corps brought ten portable water purification units to Tampico, whose municipal water system was inoperative; however, because an adjacent petroleum company had its water plant in full operation, only four water purification units were set up.

c. Health conditions. Local physicians stated that respiratory diseases (colds and broncho-pneumonia) and mild diarrheas were the only conditions above normal numbers. Three or four cases of suspected typhoid and some malaria were reported. Fungus infections and superimposed bacterial infection of the feet were common.

d. Housing and Sanitary Facilities. The displaced group was estimated by the Task Group personnel to number 60,000, with marked overcrowding, poor sanitation, inadequate clothing and bedding. Large quantities of clothing were available and were being distributed.

e. Conclusions. It is felt, however, that operational plans for similar disaster relief work should contain preventive medicine elements in the first echelon to insure complete preventive medicine coverage. This recommendation is intended in no manner to imply deficiencies in the Tampico Operation. Such provision, however, undoubtedly will prove to be of assistance to senior medical officers in similar situations.

Following is a tabulation of medical supplies available and/or expended, and medical services rendered October 2-13, 1955, inclusive:

Medical Supplies		
Weight provided by Mexican sources		1000 lbs.
Weight provided by U.S.S. Saipan		6695 lbs.
Amount expended (wt.)		
by six local Mexican Hospitals		2800 lbs.
by Navy and Mexican Medical teams		3246 lbs.
Helicopter Medical Missions (of 72 Missions through October 8, 33 were by Navy Medical Officers and 40 by Mexican Physicians)		114
Routine Medical Care		
Total number treated in outlying villages		4577
Total number treated in Tampico (by Navy)		1146
Immunizations		
by Mexican Physicians in Tampico		40,000
by Navy personnel in Tampico		10,000
Total in outlying areas		903
	Total	50,903"

As is customary in such cases, hindsight is much greater than foresight. But need it be so? Current instructions, and instructions in the process of being released, call for development of passive defense or disaster plans. These plans should include provisions for disaster relief formulated on a basis wherein mutual medical assistance for adjacent installations is a prime consideration; hence, should a disaster occur, the groundwork will have been laid; mobile teams will have been established and trained as a unit; essential supplies and equipment will have been obtained or located; personnel will be conversant with their equipment; and then the disaster unit is ready to roll—whether the disaster be man-made or a product of nature.

A most important point that should be kept in mind whenever a disaster strikes is that the Preventive Medicine Units have been established for the prime purpose of aiding in preventive medicine problems. Their continued training programs and organizations have been developed for such emergencies and should be so utilized. It is suggested, therefore, that each responsible member of the Navy Medical Department acquaint himself with the services offered by the Preventive Medicine Units, because, who knows, it may be your turn next! (PrevMedDiv, BuMed)

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Training and Assignments in Diving Medicine

Current medical officer billet allocations include four naval activities to which are assigned medical officers who have previously been trained in the medical aspects of diving and underwater swimming. Such activities are the Naval School, Salvage, Bayonne, N. J., the Naval School, Underwater Swimmers, Naval Station, Key West, Fla., and the two underwater demolition organizations under ComPhibLant and ComPhibPac at Little Creek, Va., and Coronado, Calif., respectively.

Applications are desired from Regular and Reserve medical officers of the rank of Lieutenant Commander and below for the next course of instruction in diving medicine. Such course is of approximately 2 months' duration and will commence on or about 5 March 1956, at the Naval School, Deep Sea Diving, Naval Gun Factory, Washington, D. C. No service agreement is required for this training; however, at least one year of the current service obligation must remain after graduation from the course. Billet vacancies are expected to occur next spring at the Naval School, Salvage, Bayonne, and Underwater Demolition Unit #1, U.S. Naval Amphibious Base, Coronado, Calif.

Applicants must be physically qualified in accordance with Article 15-30, Manual of the Medical Department and a completed SF 88 should accompany the application.

It should be noted that the above training is considerably shorter than the 6-month course currently prescribed for Submarine Medical Officers. The latter course includes an additional 4 months' training at the U.S. Naval Submarine Base, New London, Conn., requires a service agreement, qualifies the medical officer for duty with all submarine and diving activities, and fulfills the basic requirement toward qualification to wear the submarine medical insignia (Art. C-7309, BuPers Manual).

Applications should be forwarded to the Chief of the Bureau of Medicine and Surgery with completed SF 88 as its enclosure. (SubMedDiv, BuMed)

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"A Letter"

The following letter was received from Doctor J. Wyllie, Professor of Preventive Medicine, Queen's University, Kingston, Ontario.

"I am indebted to you for your kindness in favouring me with issues of the U.S. Navy Medical News Letter. I find some very interesting material in these publications and make extracts from them for teaching purposes.

In the issue for 4 November 1955, I was interested to read about the program for 'Influenza Vaccination' and the summary on the 'Effectiveness of Polio Vaccine.' I am enclosing a form duly filled up and trust you will continue your service during next year. Also, in this issue, I note on page 37 the water supplied to commercial concerns manufacturing ice should meet certain bacteriological and chemical standards as set forth for drinking water in the 'Preventive Medicine Laboratory Methods Manual.'

I wonder whether you could favour me with a copy of this Manual, as I am sure I would find in it some interesting laboratory methods which would be useful for teaching purposes. I shall be grateful if you can arrange to do this for me."

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

From the Note Book

1. Rear Admiral B. W. Hogan, MC USN, Surgeon General of the Navy, attended the meeting of the Association for Research in Nervous and Mental Diseases, held in New York City, December 9, 1955. (TIO, BuMed)

2. Rear Admiral B. E. Bradley, MC USN, Deputy Surgeon General, and Assistant Chief of the Bureau of Medicine and Surgery, accompanied Doctor F. B. Berry, Assistant Secretary of Defense (Health and Medical), and his Civilian Health and Medical Advisory Council, on a visit to Medical Department activities in military installations in the Caribbean area and Florida. The group visited Bermuda; the Panama Canal Zone; Guantanamo Bay, Cuba; Puerto Rico; and Key West, Jacksonville, and Pensacola, Fla. (TIO, BuMed)

3. Rear Admiral C. F. Behrens, MC USN, represented the Commandant, Sixth Naval District, at the Seventh Annual Nuclear Sciences Seminar, held at Oak Ridge, Tenn., November 28, 1955. Admiral Behrens, Sixth Naval District Medical Officer, addressed the Seminar. The subject of his address was "A Few Medical Highlights." (DMO, 5th ND)

4. At the recent Annual Meeting of the Fellows of the American College of Surgeons, Rear Admiral T. F. Cooper, MC USN, Inspector General, Medical Department Activities, was elected member of the Board of Governors to represent the U. S. Navy Medical Corps. (TIO, BuMed)

5. The Navy Department has announced the selection of four inactive Naval Reserve Captains of the Medical Corps for promotion to the grade of Rear Admiral, MC USNR. The officers selected were: Captain Waltman Walters, Mayo Clinic, Rochester, Minn., Captain Morton J. Tendler, Memphis, Tenn., Captain William G. Hamm, Atlanta, Ga., and Captain Benjamin Tenney, Jr., Boston University School of Medicine, Boston, Mass. (TIO, BuMed)

6. Captain H. C. Oard, MC USN, represented the Bureau of Medicine and Surgery at the Third American Congress of Industrial Medicine, held in Caracas, Venezuela. (TIO, BuMed)

7. Retirement Points Authorized for Certain Types of Reserve Training - The Dental Officer Mass Casualty Treatment Training Program covers the following subjects:

a. Dentistry - an aid in disaster
b. Battle dressing station duty
c. Psychological first aid
d. Field anesthesia

e. Head and neck wounds
f. Chest wounds
g. Abdominal wounds
h. Control of hemorrhage
i. Fractures
j. Cricothyroidotomy
k. Resuscitation
l. Burns
m. Shock
n. Parenteral therapy
o. Medicament
p. Dressings, bandages, splints
q. Transportation
r. Radiation injury

At the request of the Bureau of Medicine and Surgery, the Chief of Bureau Personnel has authorized one retirement point credit for each session of not less than two hours on any of the above subjects. This training may be in connection with any military or civilian dental organization, but must be given by Armed Forces Personnel. (DentDiv, BuMed)

8. What is believed to be a Navy "first" occurred recently when Rear Admiral Wendell G. Switzer, USN, relieved Rear Admiral M. E. Murphy, USN, as Commander Naval Forces Marianas in a change of command ceremony at the Naval Hospital in Guam. This is believed to be the first time that a ceremony for a change of line command has been held in a naval hospital. (TIO, BuMed)

9. More than 52 million people in communities of 25,000 and over now depend upon surface sources for their daily water supplies, as compared with fewer than 40 million eight years ago. The use of untreated water by the country's larger communities has virtually ended. Less than one percent of the population in communities of 25,000 and over today use untreated water. (PHS, HEW)

10. "Follicular Lymphoma: A Re-Evaluation of Its Position in the Scheme of Malignant Lymphoma, Based on a Survey of 253 Cases," by Henry Rappaport, M.D., William J. Winter, M.D., and Ethel B. Hicks, will be published in a forthcoming issue of the Journal, Cancer. This study comprised of a larger number of cases of this condition than has previously been reported in medical literature, presents a number of distinct cytologic variations in the neoplastic follicles which have led the authors to propose a new concept, integrating the types of this lymphoma into the general cytologic classification of malignant lymphomas. (AFIP)

11. Abscess of the prostate should be suspected in patients, particularly diabetics who have inflammatory diseases of the lower genito-urinary tract, when the disease is accompanied by severe perineorectal pain. Diagnosis and definitive therapy should not await the development of local fluctuation. (Surg. Gynec. & Obst., November 1955; L. Persky, M.D., et al.)

12. Seven cases of leukemia and one case of lymphosarcoma and pregnancy are reported. There was no exacerbation of the leukemic process during pregnancy in these patients, and no evidence of leukemia was noted in the children. (Am. J. Obst. & Gynec., November 1955; D. L. Gillim, M. D.)

13. A cobalt-60 revolution therapy unit is described. The unit was designed to hold a source of 1750 curies, although it can accommodate a source of twice that strength. The source shield revolves either completely or in sectors about a recumbent patient. The shield itself can be angulated. The distance from the source to the center of revolution is fixed at 81.6 cm. The treatment cot is aligned by means of one rotational and 3 linear motions. Rectangular and square field shapes of arbitrary size up to 15 x 15 cm. are available. (Am. J. Roentgenol., November 1955; L. H. Lanz, Ph D., D. D. Davison, M. S., and W. J. Raine)

14. Hydrodextran adequately fulfills the accepted criteria for a synthetic volume expander and offers several advantages as compared to blood. (Ann. Surg., November 1955; J. H. Harrison, M. D., W. F. Durden, M. D., A. S. Kellum, M. D.)

15. The Modern Surgical Treatment of Renal Tuberculosis is discussed in J. Internat. Coll. Surgeons, November 1955; R. Gutierrez, M. D.

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BUMED NOTICE 6310 22 November 1955

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations Having Medical Personnel Regularly Assigned

Subj: CH-5 to BuMed Instruction 6310.3, Subj: Instructions and Definitions Relating to Certain Diagnostic Titles, Individual Statistical Report of Patient, and Morbidity Report

Encl: (1) P. 23 and rev. p. 24 of encl. (1) to BuMedInst 6310.3

This notice modifies instructions concerning signature block (block 11) of NavMed-F card by providing a revised page 24 to enclosure (1) of BuMed Instruction 6310.3, and clarifies the application of the "Note" on the bottom of page 28.

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BUMED INSTRUCTION 5210.2A 2 December 1955

From: Chief, Bureau of Medicine and Surgery
To: Activities Under Management Control of BuMed
All One- and Two-Digit BuMed Codes

Subj: Annual Report of Volume of Records Held and Destroyed (Report Symbol GSA-12)

This instruction restates the requirements for an annual report of volume of records held and establishes an additional requirement for reporting volume of records destroyed. BuMed Instruction 5210.2 is canceled.

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BUMED NOTICE 6710 2 December 1955

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations Having Medical/Dental Personnel Regularly Assigned

Subj: Antibiotics; extension of potency dates

Ref: (a) Medical and Dental Materiel Bulletin (MDMB), Edition No. 60 of 1 Nov 1955

This notice provides authority to extend the potency dates of certain antibiotics.

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BUMED INSTRUCTION 6710.24 6 December 1955

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Defective Medical and Dental Material; authority for disposition of

Ref: (a) Medical and Dental Materiel Bulletin, Edition No. 60, 1 Nov 1955
(b) Art. 25-21, ManMedDept

This instruction provides authority for the disposal of defective material listed in paragraph IV of reference (a).

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MEDICAL RESERVE SECTION

"Atomic Medicine" - A New Correspondence Course

This is the title of a new Medical Department correspondence course now ready for distribution to eligible regular and Reserve officers and enlisted personnel of the Medical Department.

Evaluated at 24 promotion and retirement points, it consists of eight (8) objective question type assignments designed to acquaint and familiarize Medical Department personnel with the principles of Atomic Medicine.

During the past decade, the problems of dealing with radiation and radioactive materials have grown to major proportions and have become one of the main concerns of an increasing number of military, industrial, and medical personnel. Although ionizing radiations have been recognized and studied for more than 50 years, the atomic explosions of World War II marked the beginning of a new period in which atomic warfare and defense and peacetime use of atomic energy would influence the lives of everyone. This new era entails added responsibilities to the medical profession and offers new opportunities for medical research and treatments. As a result, the field of atomic medicine has expanded rapidly, gaining vital information for atomic defense and contributing knowledge to other medical fields.

The textbook, utilized as reading material for this course, is a complete new revision of Atomic Medicine, 2nd Edition, edited by RADM C. F. Behrens MC USN, and published by the Williams and Wilkins Company.

Applications for this course should be submitted on form NavPers 992 (with appropriate change in the "TO" line), and forwarded via appropriate official channels to the Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md.

Regular and Reserve personnel who have satisfactorily completed the previous course, Radiological Defense and Atomic Medicine, either the thesis or objective type, will receive additional credit for this course in that this is a complete revision of the former course. (NavMedSchool, NNMC, Bethesda, Md.)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, 16 May 1955.

Selection Board for Promotion to Captain U.S. Naval Reserve, Inactive

A selection board is tentatively scheduled to convene at the Navy Department, Washington, D. C., on or about 7 February 1956, to recommend Naval Reserve officers of the Medical, Dental, and Medical Service Corps on inactive duty for promotion to Captain.

Officers eligible for consideration by this board are those Commanders whose date of rank is prior to 5 November 1945. Officers who are within the above promotion zone should take individual action to insure that fitness reports for training duty, annual fitness reports, and annual qualifications questionnaires covering the period ending prior to the convening date are submitted to the Bureau of Naval Personnel in time to be included in the officers' records when presented to the selection board. Special fitness reports are not required; however, an officer applying for consideration for promotion by the selection board shall have the right to forward, through official channels, a written communication inviting attention to any matter of record concerning himself which he deems important in his consideration. Such communications may not criticize nor reflect upon the character, conduct, or motive of any other officer.

Individual officers should insure that officer records contained in the Bureau of Naval Personnel reflect correct home of record and present address.

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AVIATION MEDICINE SECTION

Major Laboratories Associated with Aviation Medicine Problems

A total of five major laboratories in the U.S. Navy are intimately concerned with aeromedical problems. For clarity, these laboratories are listed giving the mission and some of their major projects which are being pursued at this time.

Aeronautical Medical Equipment Laboratory, Philadelphia, Pa.

Mission: To conduct basic and applied research in the field of aviation medicine with particular reference to physiological and psychological aspects of aviation visual problems, and to the principles of protection of personnel against the effects of high altitudes, extreme temperature and humidities, high linear accelerations, noxious gases, and ultrasonic vibrations, as may be directed by the Chief of the Bureau of Aeronautics; and to conduct development, engineering tests, and operational evaluation of equipment required to maintain aviation personnel under these conditions.

Major Projects - Aviation Injury and Crash Studies:

1. Investigation into the health hazards of engine test cells.
2. Experimental testing with an HG-1 crash catapult.
3. Investigation of human tolerance to parachute opening shock.
4. Biomechanics of aviation crash injuries and of protective measures.
5. Hazards due to noise generated in naval activities and of methods of protection against such hazards.
6. Omni-environment full pressure suit.
7. Evaluation of aircraft crashes to obtain information needed in providing protection for personnel.
8. Development and testing of full pressure, omni-environmental suit.
9. Quick disconnects of oxygen equipment.
10. Development, testing, and evaluation of oxygen systems and components.
11. Development, testing, and evaluation of anti-exposure suits.
12. Designing of criteria for protective helmets.
13. Designing and testing of survival equipment and components.
14. Fabric research.
15. Airborne urinal bag.
16. Development and testing of ejection systems.

Aviation Medicine Acceleration Laboratory, Johnsville, Pa.

Mission: To conduct research into the biological and physical effects of acceleration forces developed in aircraft under various operational situations; to conduct research in the general fields of aviation medicine, aviation physiology, and human engineering in respects to aviation; to develop, improve, and evaluate individual aircraft and equipment.

Major Projects - Acceleration/Deceleration Studies with the Human Centrifuge and Research Aircraft:

1. In-flight physiological and psychological reaction to supine position.
2. Effects of acceleration upon the cerebral metabolism of cerebral blood flow.
3. Effects of external pressurization of the legs and abdominal cavity upon the cardiovascular system when applied during exposure to high headward acceleration.
4. Development of biological research apparatus for use in acceleration/deceleration studies.
5. Human tolerance to combined acceleration.
6. Pathological changes produced by stress of acceleration.
7. Investigation of the effects of acceleration forces on a pilot during automatic interceptor attack.
8. Observations on negative "G" developed in aerobatics.
9. Testing and development of anti-blackout equipment.
10. Anatomical distortions, fluid translocation, and electrolyte changes in animals under acceleration stress, utilizing spectrophotometric radiobiologic and quick freeze techniques.
11. Effect of increased forces of acceleration upon the blood flow and displacement of intra-vascular fluid.
12. Miscellaneous tests and minor investigations.

Aviation Physiology Studies:

1. Elastic properties of mammalia tissue.
2. Transformation of biological energy resulting from oxygen uptake.
3. Effect of heat and cold on living mammalia tissues.
4. Designing and development of multipurpose aviators' suit.
5. Testing and development of anti-blackout equipment and controls.
6. Determination of limitations of equipment and personnel.
7. Acceleration testing of personnel equipment.

Naval Medical Research Institute, NNMC, Bethesda, Md.

Mission: To implement medical and allied research for the improving of naval medical practice for the protection of personnel against injury, the prevention of disease, and the treatment of the ill and maimed.

Major Projects - Aviation Physiology Studies:

1. Transmission of physiological responses from air to ground by electronic methods.
2. Evaluation of the role of various afferent components of the nervous system in operation of aircraft.
3. Analysis of observable mental and physical behaviors involved in the actual control of aircraft and methods for their direction.
4. Acute biological effects of microwaves (radar).

Naval Air Test Center, Patuxent River, Md.

Mission: To conduct flight test trials, accelerated field service tests of aircraft, aeronautical equipment and components under flight conditions. Conduct test pilot training, provide flight support of specific projects for industrial and military agencies as assigned by the Bureau of Aeronautics. Provide technical advice and assistance to the Board of Inspection and Survey, and conduct such aircraft trials or portions thereof as may be required by that Board.

Major Projects:

1. Flight test and evaluation of omni-environmental full pressure suit.
2. Develop and evaluate liquid oxygen ground storage and transfer systems and test stands.
3. Flight test of airborne oxygen systems and controls.
4. Flight test personnel equipment.
5. Service evaluation of protective helmets.
6. Service evaluation of sound attenuating devices.
7. Flight testing of integrated harness system equipment.
8. Flight testing of cockpit air samplings in toxic gas study.

Naval Parachute Unit, NAAS, El Centro, Calif.

Mission: To conduct research development, testing, and evaluation of parachutes and related assemblies, pilot escape methods and systems, retardation and recovery systems and rescue, survival and personnel safety equipment as directed by the Chief of the Bureau of Aeronautics.

Major Projects:

1. Jump testing parachutes, harnesses, and pressure suits.
2. Jump testing survival equipment.
3. Integration of equipment with harness.
4. Testing of components of pilot escape capsules.
5. Determination of forces developed in parachute assemblies.
6. Improvement of parachutes.
7. Testing and development of automatic opening devices.
8. Testing protective helmets in jumps.
9. Testing and improvement of canopy releases.
10. Testing and improvement of parachute assemblies for droppable survival equipment.
11. Testing and development of high altitude emergency chute system

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Hardheaded Use of the Hardhat

The following is taken from a recent Medical Officers Report of an Aircraft Accident:

"The pilot was flying a night carrier hop. He received two wave-offs for being too high and received a cut on his third pass. He took a late cut and floated down the deck, apparently never touching the deck until his landing gear struts engaged the barrier. The aircraft flipped over on its back and it was several minutes before the pilot could be extricated. He received fatal injuries.

The pilot did not report aboard the ship until approximately 0430 on the morning of the crash. He was out of bed by 0730 and was seen in the ready room at 0800, giving him only 3 hours sleep on the night before the crash. He had lectures all morning and flew one afternoon hop, and it is believed by the squadron that he did not get any sleep during the day.

Examination of the wreckage showed the following facts:

1. The pilot's helmet was resting on the flight deck, midway between the cockpit and the tail when the wreckage came to rest.
2. The gunsight was broken off and resting on the deck immediately beneath the cockpit.
3. The gunsight had several red spots on it which showed a positive chemical test for blood.
4. The inertia reel locking handle was in the unlocked position . . .

Examination of the pilot's helmet showed the following facts:

1. The H-4 helmet outer protective liner was unscratched and in one piece; it was completely undamaged.
2. No inner liner was being used by the pilot. He had cemented a ring of sponge rubber to the sides of the outer shell, and in the cavity placed the earphones and kapok liners from the inner liner. He had removed the leather strips containing the 02 mask snaps from an inner liner and bolted them in place on the anterior edges of the outer shell, using two small stove bolts on either side.
3. The only chinstrap on the helmet was a strip of elastic from a pair of goggles, which had snap fasteners on both ends. The snap on one end had pulled completely out, making it impossible to fasten the strap.

It is apparent that the following sequence of events took place. The pilot was making high approaches, not using his radio altimeter. The plane hit the barrier and flipped over on its back. The helmet came off as the aircraft became inverted, thus depriving the pilot of whatever protection his personalized helmet might have given him. With the shoulder harness unlocked, the impact caused the pilot to ram his unprotected head either into the deck, or into the gunsight, or both, causing his fatal injuries . . . . .

Recommendations (by the reporting flight surgeon):

1. That the appropriate officer of each squadron hold a periodic inspection of all pilots in their flight gear. In this way, the pilot can find what discrepancies are present in his gear and get them corrected before trouble develops. Also, it gives the squadron a chance to see if any modifications have been made to the standard issue flight gear and to correct these discrepancies.
2. That the importance of checking the shoulder harness lock as a routine part of the landing check-off list be re-emphasized frequently, especially in night carrier squadrons."

(Editor's Note: Have you taken a look at the protective gear being worn by pilots in your squadron recently? Any hardheads around who need convincing? Perhaps the above account will serve to set them straight.)

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Historical Facts of Interest for November and December

November 1

1920 U.S. international passenger service was started by Aeromarine West Indies Airways between Key West, Fla., and Havana, Cuba.

November 3

1909 Lt. George C. Sweet, USN, was taken as a passenger in the first Army Wright airplane, thus becoming the first Naval officer to fly in an airplane.

November 4

1911 The first flight of the new transatlantic airship Akron, designed by Melvin Vanniman, took place at Atlantic City, N.J.

November 5

1921 Bert Acosta in a Curtiss Navy C12, Curtiss 400, won the Pulitzer Race at 176.7 mph at the Omaha, Neb., air meet.

November 6

1915 The first airplane catapult launching from a moving vessel was made by CDR Henry C. Mustin, USN, from the USS North Carolina, Pensacola Bay, Fla.

1945 The first jet propelled landing on an aircraft carrier was made by Ensign Jake C. West, USN, in an FR-1 Navy turbo-jet and conventional reciprocating engine fighter, using jet power to land on the carrier Wake Island.

November 9

1935 U.S. Navy made the first mass seaplane flight from Honolulu to French Frigate Shoals, flying 759 miles nonstop in 6 hours 10 minutes.

November 12

1912 The second, and successful, catapult launching made by LT T.G. Ellyson in a Curtiss seaplane from a float in the Washington Navy Yard

1921 The first "air-to-air" refueling was made by Wesley May, with a five-gallon can of gasoline strapped to his back. He transferred from the wing of a Lincoln Standard, flown by Frank Hawks, to the wing skid of a JN4, flown by Earl S. Daugherty, climbed to the engine, and poured the gasoline into the tank.

November 14

1910 The first take-off from a Navy ship was made by Eugene Ely from a platform built on the deck of the USS Birmingham, anchored at Hampton Roads, Va.

November 16

1927 The Navy aircraft carrier Saratoga was commissioned.

November 21

1917 The Navy's robot bomber (a flying bomb) was demonstrated to Army, Navy, and civilian aviation experts at Amityville, N.Y.

1933 LTCDR Thomas G. W. Settle, USN, and Major Chester L. Fordney, USMC, set a balloon altitude record of 61,237 feet over Akron, Ohio.

November 22

1949 The Navy announced that its D-558-2 Skyrocket had repeatedly exceeded the speed of sound at Muroc, Calif.

November 29

1929 CDR Richard E. Byrd, in a tri-motor Ford piloted by Bernt Balchen, made the first flight over the South Pole.

December 1

1949 The Navy supersonic windtunnel, capable of 3000 mph speeds, was dedicated at MIT.

December 2

1943 U.S. Navy announced acceptance for the Naval Transport Service of the world's largest flying boat, the 70-ton Martin Mars.

December 10

1943 Secretary of the Navy, Frank Knox, disclosed that the flying boat Mars, recently delivered, had flown 8972 miles on a round trip from the United States to Natal, Brazil. It set records for weight of cargo (35,000 pounds) and for the longest overwater trip—4375 miles from Patuxent, Md., to Natal.

December 29

1948 Defense Secretary Forrestal announced that the United States is working on an "earth satellite vehicle program," a project to study the operation of guided rockets beyond the earth's pull of gravity.

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Course in Aviation Medicine

The Bureau of Medicine and Surgery announces that a class in Aviation Medicine will convene at the U.S. Naval School of Aviation, Naval Air Station, Pensacola, Fla., on 2 April 1956. The course consists of approximately 6 months of academic instruction in aviation medicine and flight indoctrination training, and leads to the designation of successful candidates as U.S. Naval Flight Surgeons.

The class will be limited to 30 students and is open to medical officers of the Regular Navy and Naval Reserve in the ranks of Lieutenant Commander or below.

Medical officers who wish to apply for the Course in Aviation Medicine should do so by official request via the chain of command to the Chief of the Bureau of Medicine and Surgery which shall contain this service agreement: "If this request is approved, I agree to remain on active duty for one (1) year upon completion of the Course in Aviation Medicine, or for six (6) months beyond my currently obligated service, whichever is longer." (AvMedDiv, BuMed)

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Flight Surgeons to Solo Again

The Chief of Naval Operations has approved the request of the Commanding Officer of the Naval School of Aviation Medicine and the Chief of

Naval Air Training to allow the authorization for student flight surgeons to solo naval aircraft. Those student naval aviators who are physically qualified in accordance with the standards of Service Group I will be allowed to solo the T-34 aircraft during the aviation indoctrination portion of their training.

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Opening for Flight Surgeon for Training Leading to Designation of Naval Aviator

There will be an opening in 1956, for a flight surgeon to take advanced training leading to the designation of Naval Aviator. Applications for such training are requested by the Aviation Medicine Division, Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C., to be submitted by all interested flight surgeons who are physically qualified in accordance with the Manual of the Medical Department, Chapter 15-67.

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Joint Committee on Aviation Pathology

The Department of Defense has approved the establishment of a central coordinating joint committee on aviation pathology under the Armed Forces Institute of Pathology. The membership shall include representatives of applicable organizations within the Department of Defense, and, with the concurrence of appropriate authority, representatives of the military services of the United Kingdom and Canada.

Stimulated by the lack of knowledge on the subject of aviation pathology, a series of informal meetings was held by representatives of the military services of the United Kingdom, Canada, and the United States during 1954. In March 1955, with the official concurrence of these medical services, a symposium on "The Pathological Correlation of Aircrew Fatalities" was held at the Armed Forces Institute of Pathology. The general agreement of the value of this meeting and the need for more information in this field emphasizes the requirement for coordinated action among the military organizations of the United Kingdom, Canada, and the United States.

The Joint Committee on Aviation Pathology will be concerned with all matters relating to the role of pathology as applied to aviation and flight safety, and will act as a focal point for the dissemination of information on this subject. The special areas of interest are:

1. Collection of information regarding the correlation between pathological evidence and causative factors of aircraft accidents.
2. Initiation of detailed pathological investigations which may yield information relating to the cause of hitherto unexplained aircraft accidents.
3. Improvement of flight safety records as a result of pathological correlation data.
4. Investigation of possible insidious changes induced by repeated and long duration exposure to environmental factors and forces present during flight.
5. Establishment of a long range program involving the accumulation of pathological data from a large series of cases.
6. Investigation of psychological and physiological factors which may produce pathological changes as a result of flight stresses.

The membership of the Committee shall not exceed two representatives from the Washington, D. C. area of each of the following organizations within the Department of Defense, together with invited representatives designated by the United Kingdom and Canada: United States Army, United States Navy, United States Air Force, and Armed Forces Institute of Pathology.

The chairman shall be chosen by the members of the Committee and the chairmanship shall rotate annually among the member agencies. Meetings will be held in Washington, D. C., at the discretion of the chairman and the Committee. A member representing the Armed Forces Institute of Pathology will act as recorder for the Committee and will provide clerical assistance as required. All inquiries or requests for information relative to the activities of the Joint Committee on Aviation Pathology should be addressed to the Armed Forces Institute of Pathology, Washington, D. C.

The Departments of the Army, Navy, and Air Force will designate as their representatives one or two members representing their respective medical services. The names of these representatives will be submitted to the Director, Armed Forces Institute of Pathology, who will also appoint one or two members of the Armed Forces Institute of Pathology to the Committee. Members of the Joint Committee on Aviation Pathology may invite observers to meetings of the Committee from their own or other interested agencies.

The Armed Forces Institute of Pathology shall maintain a file of the findings of the Committee. Abstracts of these findings and Committee reports shall be made available to member agencies and, when appropriate, to medical and research activities of other Government agencies which have an interest in such matters.

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Contributions Requested for Aviation Medicine Section, Navy Medical News Letter

Flight surgeons in the field attached to the fleet are requested to submit to the Bureau of Medicine and Surgery (Code 536) items which they consider to be of general interest to other flight surgeons. Articles will be reviewed and necessary editorial assistance will be furnished by this office.

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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